through the capillaries to the blood circulating to the veins. Similar considerations will also determine the extent of deligation, which, except where severe hemorrhage occurs, need, in the majority of cases, only be applied to the smaller arteries. Though setons were employed in the case now related, yet galvanism, the injection of perchloride of iron, and other similar agents, may, in some instances, perhaps, be advantageously substituted; and even the risks attending ligature of the arteries may, by instrumental or digital compression, be occasionally obviated.

Mr. C. H. MOORE said the ligature of the carotid in this case was not for the cure of the disease, but for the arrest of excessive arterial hemorrhage. It was quite a different question whether such aneurisms required ligature of the vessel for their cure. In some it would not be necessary; in others the predominance of large arteries might, perhaps, be so great as to demand the operation. He had seen a case in which the tumour was as large as that described by the author in which (under Mr. De Morgan's care) cure had been effected by setons repeatedly passed, by needles, over which were placed caoutchouc rings, and by threads carrying perchloride of iron. By these means the tumour became so much less that the patient could leave the hospital. Five years later he came under the care of Mr. Nunn. He then had an overlap or fold of skin in the position of the tumour, but no trace of the former disease. There was an abscess, of the size of two eggs, which occupied the site of the tumour Mr. Moore then referred to vascular tumours of the scalp in children, which sometimes attained a formidable size, and then occasionally attempts to cure them were followed by inflammation and death. He had had no experience of tying the carotid in such cases, but when a large vessel was open and it was impossible to tie it or the vessels entering the tumour one after another, it would be necessary to tie the main trunk.

29. *The Surgical Treatment of Certain Cases of Acute Inflammation of the Veins.*—Mr. HENRY LEE read (May 9, 1865) a paper on this subject before the Royal Medical and Chirurgical Society.

He stated that in Mr. ARNOTT's paper on "Inflammation of the Veins," published in the fifteenth volume of the *Medico-Chirurgical Transactions*, he had drawn the inference that the dangerous consequences of phlebitis bear no direct relation to the extent of the vein which is inflamed. He had there proved, by an excellent collection of cases, and by his observations on those cases, that death in cases of phlebitis does not take place from the inflammation extending to the heart, but from the entrance of some morbid product into the general circulation (pp. 44 and 61). In a paper by Mr. Lee, published in the thirty-fifth volume of the Society's *Transactions*, he had endeavoured to show that the material which obstructs the cavities of veins in cases of phlebitis is derived from the blood itself, and is not in the early stages of the disease a secretion from the lining membrane of the vessels; that the veins become extensively inflamed only in cases where coagula have previously formed; and that the purulent-looking fluid, often found in the cavities of inflamed veins, is derived from the changes which, under the circumstances, take place in the fibrin of the blood. The distinction which he wished to establish between the process by means of which fibrin is deposited from the blood, and that by which lymph is secreted from the lining membrane of a vein, was of primary importance, not only with regard to the pathology of this class of diseases, but also with regard to their surgical treatment; for it must be obvious that if the material which occupies the cavities of the vessels in cases of phlebitis were secreted by the inner coats of the veins, it would adhere firmly to that membrane, and would be found lining equally the whole circumference. It would not be displaced by the force of the circulation, nor by any other mechanical means likely to be employed. Moreover, the morbid process would extend by continuity of action, and would not be arrested by any surgical interference. If, on the other hand, the material found in the veins were derived from the blood, it might be expected to adhere slightly only to the walls of the vessels, to be attached to one part only of those walls, and to be removed easily by any mechanical force. It would be deposited in uncertain quantity, and at irregular intervals, leaving portions of the lining

membrane between those intervals free from deposit, and of its natural appearance. The deposit would often, as had actually occurred in some of the cases related by Mr. Arnott, terminate abruptly at the entrance of a fresh vessel; the reason of this abrupt termination being, as it appeared to Mr. Lee, the greater velocity and force of the circulation in the common trunk than in that which is partially obstructed. Now, the appearances actually observed on *post-mortem* examinations in cases of phlebitis all belonged to the latter and not to the former class, and the conclusion necessarily followed that the disease extends, as far as its severer symptoms are concerned, not by continuity of action in the lining membrane of the vessels, but by means of their contents, often in a more or less perfectly coagulated state. If that were the true course of the fatal symptoms in phlebitis, it appeared surprising that more attempts had not been made to arrest the progress of the disease by surgical treatment. Such attempts, however, had not been entirely wanting. Hunter remarked that when inflammation takes place beyond the orifice (of a vein) so as to alarm the surgeon, he should immediately make a compress upon the vein at the inflamed part, to make the two sides adhere together; or, if suppuration has taken place, then the compress must be put upon that part of the vein just above the suppuration.[1] Now, as lymph was not effused in the early stages of phlebitis from the lining membrane as a secretion from its inner surface, the adhesion produced by Hunter's method of treatment could be formed by coagulum of blood only. This would not, under ordinary circumstances, become organized; it would adhere to one side only of the vessel, and it would constantly be liable to become displaced. Such a bond of union, although it might for a time prevent the morbid contents of a vein from entering the general circulation, could scarcely be looked upon as affording a permanent bond of union between the sides of the vessel. In cases where the affected vein is seated superficially, a much more certain and effectual way of closing its canal and of barring the entrance of its contents from the general circulation might be adopted. This method, which, when properly performed, Mr. H. Lee believed to be free from danger, was adopted in three out of four of the following cases. The fourth case was given as an illustration of Mr. Hunter's method of treatment. It would, the author thought, be obvious that, although Mr. Hunter's method might, perhaps, have been successfully adopted in the first case, it could not have been used with any reasonable chance of success in the second and third. Four cases were then read in which, in severe cases of phlebitis, the current of blood was artificially arrested between the inflamed vein and the centre of the circulation. In one instance a pad was placed over the upper extremity of the basilic vein, and retained in its position by a bandage. In two cases a needle was passed under a healthy and unaffected portion of the vein, and pressure was made by means of a figure-of-8 ligature; and in one case the vein above the seat of the inflammation was divided subcutaneously, the two divided extremities being secured by acupressure. Of these different plans of effecting the same object, Mr. Lee preferred decidedly the latter. In any future similar case it was that to which he should have recourse. By the operation of subcutaneous section a permanent union was effected, because that union took place between the opposed portions of cellular tissue on the outside of the vessel. Such a union was vascular, and, therefore, not liable to be broken down. By it no suppuration need be excited, and the needles used for the purpose of acupressure might be removed at the expiration of two, three, or four days, when the union would be complete. Union could not be insured within the same period by the pressure of a needle placed under the vein. If the needle be removed at that time, the current of blood would be liable to be re-established through the vein; if it be left, suppuration might be excited on the outside of the vessel; this might lead to the coagulation of the blood both above and below the part where the vessel was compressed, and the coagula thus formed might undergo the very changes which produced the serious symptoms for which the operation was undertaken. In one of the recorded cases this appeared in some measure actually to have happened, for although the current of blood through the vein

[1] Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, p. 29.

was arrested, yet suppuration took place both above and below the needle last introduced. In another case, on the contrary, where the vein was divided, no trace of inflammation extended beyond the divided part. In both these cases the products of the diseased actions were expelled from the interior of the veins by the process of suppuration; but had the flow of blood through the vessels been allowed to continue, some of these same morbid products would have been carried in the course of the circulation, and would have produced their effects in other and distant organs.

In reply to some criticisms, Mr. Lee remarked that his paper was upon the surgical treatment of acute inflammation of the veins after that disease had already been produced. He had purposely abstained on the present occasion from considering the best mode of operating for varicose veins, or from dwelling on the pathology of phlebitis. Those subjects had been fully discussed on former occasions, and some of the conclusions arrived at were recorded in the *Transactions* of this Society. As, however, the two subjects mentioned had been introduced to the notice of the Society, he might be allowed to say that in the operation for varicose veins it was, in his opinion, a dangerous practice to lay bare the coats of the vein. It was an operation that had been adopted by some of the older surgeons, and had often led to dangerous and even fatal consequences. The question which Mr. Savory had been good enough to ask—namely, whether the lining membrane of veins was liable to ordinary inflammation, and whether lymph could be thrown out upon its surface, was one of primary importance with regard to the pathology of this disease. All recognized the results of inflammation of a vein. After it had existed some time the coats of the vein became thickened; they could be felt as a hard unyielding cord below the skin; and if removed from the body and cut transversely, they would remain open like the coats of an artery; at the same time the cavity of the vein was filled with coagula, or with the fibrin of the blood more or less decolorized. Now, the great question at issue was, Does the inflammation of the vein produce this coagulation of the blood? or does the coagulation of the blood produce the inflammation of the vein? Is the lining membrane of the veins subject to spontaneous inflammation like the serous membranes of the body, and does it, like them, when inflamed, secrete lymph? Now he (Mr. Lee), ever since he had given his attention to this subject, had held that the lining membrane of veins was not at all analogous in its pathological relations to the serous membranes. Being non-vascular, it was not, like them, liable to attacks of spontaneous inflammation, and especially it was not capable, like them, of secreting coagulable lymph. When a serous membrane was inflamed, the lymph secreted united with the lymph on the opposed surface, and the cavity was closed where such a union took place. If the veins were liable to such mode of action, the circulation in our bodies would be constantly and permanently obstructed. But Nature had wisely ordained otherwise. The lining membrane of the veins, even under great irritation, would not secrete lymph; and the obstruction in veins was derived entirely from the materials of the blood. These observations applied to the disease in its earlier stages. During the later stages, when the parts had become altered by long-continued diseased action, the lining membrane of the veins might secrete lymph or pus like other parts. It was so with regard to the cartilages of joints, which might be taken as a rough illustration of the present subject; naturally they contained no vessels, and they could not secrete lymph; but after having undergone changes produced by long-continued disease, they might become permeated by vessels, and then they would secrete lymph and pus like other inflamed parts. In the early stage of the disease, he (Mr. Lee) had never seen a case in which lymph was effused on the lining membrane of a vein, and he held that in all cases of acute phlebitis the severe symptoms depended upon some morbid matter which had entered the cavity of the vein. If a portion of a vein were isolated from the rest of the circulation, and closed at two points by acupressure, the part of the vessel thus isolated might be cut or irritated in any way, and no symptoms of general irritation would be induced; whereas it was well known, from the writings of Sir B. Brodie and some of the older surgeons, what serious and fatal consequences would occasionally follow operations on the veins when such a precaution was not taken. When Ambrose Paré suggested the ligature of divided

arteries as a safe and comparatively painless mode of preventing hemorrhage, it was long before his doctrine was generally received; and it will not be, therefore, surprising if a considerable interval should elapse before the simple mode of preventing hemorrhage on the one hand or absorption on the other, from divided veins by acupressure, comes into general practice. But he (Mr. Lee) could say now, from a very considerable experience in operating upon varicose veins, that it was a plan perfectly effective and free from danger. When properly performed, it not only prevented any symptoms of general irritation from the usual operation of varicose veins, but when from any accidental circumstance inflammation of a vein had arisen, it would (as had been proved by the cases now read to the Society) prevent the extension of the inflammation along the inflamed vessel. This it did, of course, by preventing the transmission of the irritating contents of the vessels, upon which alone he (Mr. Lee) believed the symptoms to depend. With regard to the cases related being instances of genuine acute phlebitis, such as, without some preventive treatment, generally led to a fatal termination, he had only to appeal to the symptoms observed. When a severe rigor occurred in these cases, followed by a profuse perspiration, and the pulse continued from 120 to 140, he need not say that the gravest consequences were to be apprehended.

30. *Resection of the Ankle-Joint where the Bones are crushed.*—During the late Schleswig-Holstein campaign, Professor Von Langenbeck, who acted as Surgeon-General to the Prussian army, made, amongst many other similar operations, five times the resection of the ankle-joint in cases where the bones were crushed to such an extent that many surgeons would have decided upon amputation of the leg. Von Langenbeck is of opinion that amputation may in many cases be dispensed with not only where the ankle-joint has been opened by a gunshot wound, but also where the bones constituting the tibio-tarsal articulation have been considerably injured. Where projectiles have passed transversely through the malleoli and the talus, a complete recovery may ensue without anything being done but incising the joint for the purpose of providing an exit to the pus, and extracting bone splinters which may be present and are accessible to the surgeon.

It is a curious fact that the resection of the ankle-joint has many times been performed, since the end of the last century, for complicated fractures and dislocations, and for caries, amongst others by Messrs. Gooch, Moreau, Cooper, Jäger, and Textor, but that in none of the numerous wars which have been waged since that time has the same operation been made in gunshot injuries of the ankle-joint. M. Velpeau, it is true, states in his treatise on operative medicine that a Mr. Read had, in a case of gunshot wound of that joint, sawn off the lower ends of the tibia and fibula, and that a useful foot had been the result. Most authors quote this case, after Velpeau, as one of resection; but on close analysis it appears that the operation, which was performed after the battle of Fontenoi, in 1745, consisted merely of the extraction of fragments of bone from the crushed ankle-joint, and not of resection, which latter was not known before 1768. Nevertheless, the case in question, which is fully mentioned in Faure's prize essay on amputation (1759), is one of great interest, and shows how much may be done by conservative surgery.

Neither in the Crimean nor in the last Italian war has the resection of the ankle-joint been performed. Recent authors on military surgery, such as Demme and Legouest, reject the operation altogether as unsuitable. Now, Professor Von Langenbeck had, since 1850, four times performed it in private practice. In all these cases there had been long-continued suppuration after injuries. In two of them there had been complicated dislocation of the foot: in the third, dislocation of the foot, with fracture of both malleoli; in the fourth, that of an old Russian officer, the ankle-joint had been crushed in the battle at the Alma by a Minié ball. In the first two cases a piece of the tibia, three inches long, was resected; in the third, both malleoli and the surface of the talus; in the fourth, a piece of the tibia, four inches long, and the largest portion of the talus. In all these cases the periosteum was completely preserved, and the cure resulted without shortening, abundant osseous tissue being formed. In the second and